

REMARKS

By way of summary, Claims 1-37 are pending in this application. Claims 10-16, 23 and 31-37 were previously withdrawn. Claims 1, 8, 22 and 29 are amended as presented herein. Claims 3 and 4 are canceled without any prejudice or disclaimers. New Claim 38 is added as presented above. Accordingly, Claims 1, 2, and 5-38 remain pending.

Regarding Independent Claims 1 and 22

The Office Action rejects Claims 1 and 22 under 35 U.S.C. §102(b) as being anticipated by U.S. Publication No. 2001/0043396 to Lee. Applicant respectfully traverses this rejection.

Lee discloses a diffractive device having a surface relief structure which when illuminated by a light source generates one or more diffraction images which are observable from particular ranges of viewing angles around the device. The device includes background diffractive structural elements and interstitial diffractive structural elements. See, for example the Abstract of Lee.

Claim 1 as amended recites:

A grating image having one or more grating fields, each of which includes an electromagnetic-radiation-influencing grating pattern comprising a plurality of grating lines, the grating lines being characterized by the parameters orientation, curvature, spacing and profile, wherein in the grating image, a grating field that is separately perceptible with the naked eye includes an electromagnetic radiation-influencing grating pattern having grating lines for which at least one of the characteristic parameters orientation, curvature, spacing and profile varies across the surface of the grating field, wherein the varying characteristic parameter(s) exhibit a random variation across the surface of the grating field, and wherein said grating field displays no diffractive effects when viewed.

Claim 22 as amended recites:

A method of manufacturing a grating image, which comprises forming in a substrate one or more grating fields, providing each of the grating fields with an electromagnetic radiation-influencing grating pattern filling the grating fields and comprising a plurality of

grating lines, the grating lines being characterized by the parameters orientation, curvature, spacing and profile, and in the grating image, a grating field that is separately perceptible with the naked eye is filled with an electromagnetic radiation-influencing grating pattern having grating lines for which at least one of the characteristic parameters orientation, curvature, spacing and profile is varied across the surface of the grating field, wherein the varying characteristic parameter(s) exhibit a random variation across the surface of the grating field, and wherein said grating field displays no diffractive effects when viewed.

In contrast, Lee in paragraphs [0066] and [0069], discloses that in some arrangements, the surface relief structure may include diffusely reflecting **randomly distributed interstitial elements between the background elements** (emphasis added). However, the background elements themselves are not randomly distributed. For example, Lee discloses that:

The background diffractive structural elements provide a “carrier wave” which has continuous connectivity throughout the structure, thereby minimising the diffuse scattering edge effects when compared to similar effects that arise from the edges of the pixels in Pixelgram™ and Kinegram™ structures and along the edges of tracks in Exelgram™ structures. Diffuse scattering effects from the edges of pixellated devices of very small pixel size have the effect of reducing brightness of the observed optical effects.

Lee at paragraph [0072] (emphasis added). The continuous variation of the background structural element pattern is also discussed in paragraphs [0073] – [0076] and [0100] of Lee. For example, Lee states that “since the **background structural element pattern is continuous** in both directions, the image resolution of any image encoded into the microstructure is determined by the relative sizes of the interstitial element regions.” See, for example, Lee in paragraph [0074] (emphasis added).

Thus, in view of the above discussion it is apparent that Lee discloses that the interstitial elements are randomly distributed but not the background structural elements.

Additionally and independently, Lee discloses that:

The interstitial elements are interspersed between the background elements such that the diffractive action of the background elements is

modulated by the interstitial elements, with differing interstitial element configuration in differing parts of the surface relief structure producing differing diffraction effects in corresponding parts of the diffraction images.

See, for example, paragraph [0017] (emphasis added).

Accordingly, Applicant submits that Lee does not teach a “grating image having one or more grating fields ... having grating lines for which at least one of the characteristic parameters orientation, curvature, spacing and profile varies across the surface of the grating field, wherein the varying characteristic parameter(s) exhibit a random variation across the surface of the grating field, and wherein said grating field displays no diffractive effects when viewed.” as recited by the amended Claim 1.

Applicant submits that Lee also does not teach “A method of manufacturing a grating image which comprises forming in a substrate one or more grating fields ... grating pattern having grating lines for which at least one of the characteristic parameters orientation, curvature, spacing and profile is varied across the surface of the grating field, wherein the varying characteristic parameter(s) exhibit a random variation across the surface of the grating field, and wherein said grating field displays no diffractive effects when viewed.” as recited by the amended Claim 22.

Thus, Claims 1 and 22 are patentable over Lee.

Regarding Claims 2-7, 9, 17, 18, 20, 22, and 24-30

The Office Action rejects Claims 2, 5-7, 9, 17, 18, 20 and 24-30 under 35 U.S.C. §102(b) as being anticipated by Lee. Claims 2, 5-7, 9, 17, 18, 20 and 24-30 depend from Claim 1. Claim 1 is patentable over Lee for at least the reasons discussed above. The dependent Claims 2, 5-7, 9, 17, 18, 20 and 24-30 include all the features recited by Claim 1 and recite unique combinations of additional features. Thus Claims 2, 5-7, 9, 17, 18, 20 and 24-30 are also patentable over Lee.

The rejection of Claims 3 and 4 is moot in view of their cancellation.

Regarding Claim 8

The Office Action rejects Claim 8 under 35 U.S.C. §103(a) as being unpatentable over Lee in view of U.S. Patent 5,101,184 to Antes. The Office Action recognizes that Lee does not disclose that the “grating field forms a matte pattern” as recited by Claim 8. Nevertheless, the Office Action asserts that Antes discloses surface relief structures that produce optical effects

similar to a matte surface. The Office Action further states that a person having ordinary skill in the art can include the matte pattern of Antes into the diffractive device of Lee

As discussed above, Lee discloses a diffractive device having background structural elements and interstitial structural elements interspersed between the background structural elements such that only interstitial elements are distributed randomly. This continuous variation of the background structural element pattern is technically inconsistent with forming a matte pattern as recited by Claim 8.

Moreover, Antes does not disclose a “grating image having one or more grating fields ... having grating lines for which at least one of the characteristic parameters orientation, curvature, spacing and profile varies across the surface of the grating field, wherein the varying characteristic parameter(s) exhibit a random variation across the surface of the grating field, and wherein said grating field displays no diffractive effects when viewed.”

Contrary to the Office Action, a person having ordinary skill in the art would not introduce the matte pattern of Antes into the diffractive device of Lee since the continuous variation of the background structural elements as disclosed by Lee provides numerous advantages as disclosed in paragraphs [0072] – [0076]. For example, the background diffractive structural elements provide a “carrier wave” which has continuous connectivity throughout the structure, thereby minimizing the diffuse scattering edge effect. See, for example, paragraph [0072] of Lee. Another advantage disclosed by Lee is that by embedding interstitial elements within the continuous background structural element pattern makes the surface relief structure more secure with respect to attempted re-origination by reverse engineering of the optical microstructure.

Furthermore, interstitial “doping” of a continuous back-ground structural element pattern by a multiplicity of structural element “filaments” of variable length, width, curvature and depth allows for the incorporation of a much greater range of specialized optical security effects at a much smaller scale as compared to diffractive microstructures based on a pixellated format.

Thus a person having ordinary skill in the art would not lose above described advantages by introducing the matte pattern disclosed by Antes.

Accordingly, Claim 8 is patentable over Lee in view of Antes.

Regarding Claims 19 and 21

The Office Action rejects Claims 19 and 21 under 35 U.S.C. §103(a) as being unpatentable over Lee in view of U.S. Patent 6,815,065 to Argoitia. Claims 19 and 21 depend from Claim 1. As discussed above Claim 1 is patentable over Lee. Argoitia does not remedy the deficiencies of Lee. For example, Argoitia does not disclose “grating image having one or more grating fields ... having grating lines for which at least one of the characteristic parameters orientation, curvature, spacing and profile varies across the surface of the grating field, wherein the varying characteristic parameter(s) exhibit a random variation across the surface of the grating field, and wherein said grating field displays no diffractive effects when viewed.” as recited by the amended Claim 1. Accordingly, Claim 1 is patentable over Lee in view of Argoitia. Claims 19 and 21 include all the features of Lee and recite unique combinations of additional features. Thus, Claims 19 and 21 are also patentable over Lee in view of Argoitia.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, Applicant is not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.

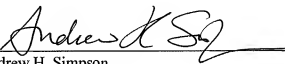
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Respectfully submitted,

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